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"In a day or two I will send you positions for April, on the supposition that the comet will arrive at perihelion in August, September, and October. I had, for the sake of convenience, laid down the places on a chart, which is much the best plan for practical purposes, but any one may do this when they are furnished with the computed positions.

"My ephemeris I will send as soon as possible. Mr. Barber has worked very hard on this comet, and has been compelled to use various artifices to shorten the work, some of which I believe to be new. Thus, at the aphelion, he has proceeded by equal intervals of *true* anomaly, and one or two changes have been made in the usual application of the formulæ of integration. I will ask him to send you an account of his work, as it is right the trouble he has taken should be appreciated.

"By far the largest perturbations occur at great distances from the sun. I knew this had happened in the case of Halley's comet, which was my reason for supposing that the comet of 1556 would furnish another instance, since the *cause* must be more powerful in the latter case."

Note from M. O. Struve to G. B. Airy, Esq. Astronomer Royal, and President of the Royal Astronomical Society.

"To my note on the parallax of Groombridge, 1830, I must make an addition. I have found a third system of equations, in which the conditions of the systems I. and II. have been combined as well as possible. The resolution of the new equations has given the following results:—

The parallax .... = +0″·034 with the probable error 0″·029
The proper motion in declination —5·748 —— 0·024

These values must be regarded as the definitive result of my research.

"1850, *Jan.* 3."

Extract of a Letter from Mr. Lowe on Zodiacal Light, as seen at Highfield House, near Nottingham.

"As some curious features have been noticed in the '*Western Light*,' whether it be the zodiacal light or another phenomenon, a brief extract from my journal has been thought to be acceptable.

Epoch 1850, February $13^{d}\ 7^{h}\ 30^{m}$.

"The zodiacal light was certainly more brilliant to-night than it has been for the last seven years (*i. e.* as far as my observations extend); it exceeded the brightness of the milky way about the *Swan*, which was the part compared with it. *Saturn* was about 2° within its southern edge, and its apex must have had an altitude equal to that of the *Pleiades*. Unfortunately clouds came over before any bearings were made. *Saturn* was thought to be dimmed by it.

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Epoch 1850, March $6^d\,7^h\,42^m$.

"Extent of base on horizon, 36°; its southern edge cut the horizon 13° S. of W., and its northern edge 23° N. of W.; long. of apex ♉ 21° 30′ when at its brightest, yet at times only visible to ♉ 17°; axis slightly N. of *Pleiades*, and the horizon 5° N. of W. The S. edge somewhat confused, but appeared to pass through ξ *Ceti*, α *Ceti* about 2° within the edge; the N. edge was better defined, and was tolerably bold about γ *Arietis*; it passed through ρ *Piscium*, between γ and β *Arietis* (about midway), and 1° S. of δ *Arietis*. Not nearly so brilliant as on February 13^d, but appears to have pulsations of greater and less brilliancy in periods of 30^s. This was first noticed by several small stars being alternately visible and invisible; it was not changeable like aurora borealis, for it invariably receded to a certain dimness, and then brightened to a certain extent.

Epoch 1850, March $7^d\,8^h\,0^m$.

"The N. edge certainly extended to β *Arietis*. Pulsations of greater and less brilliancy again noticeable.

Epoch 1850, March $8^d\,7^h\,15^m$.

"Pale and confused. Stars dim.

Epoch 1850, March $9^d\,7^h\,55^m$.

"Brilliant for a few minutes, during which time the alternating of brightness was observed.

Epoch 1850, March $10^d\,7^h\,50^m$.

"Brilliant for 7^m; then clouds. Its N. edge was thought to extend to α *Arietis*. Strong pulsations; brighter than last night.

Epoch 1850, March $11^d\,7^h\,59^m$.

"Fainter. The apex reached ξ *Arietis*. The S. edge passed just to the north of μ *Ceti*, ξ *Ceti* about 2° within the edge; the N. edge half-way between α and β *Arietis*. Faint pulsations.

Epoch 1850, March $12^d\,8^h$.

"Fainter. S. edge confused; N. edge passed between α and β *Arietis*, but slightly nearer β than half-way. Apex reached ξ *Arietis*.

Epoch 1850, March $13^d\,8^h$.

"Yet fainter. N. edge passed between α and β *Arietis*, yet still nearer β than last night. Apex reached ξ *Arietis*.

"Clouds or moonlight prevented the phenomenon being noticed between February 13^d and March 6^d, and from March 13^d to 23^d (present time). I had seen it, and noted down bright zodiacal light, from the middle of January; and it appears to have been increasing in brilliancy up to the time we lost sight of it first, viz. February 13^d. During its second appearance it has been gradually fading. The stars α, β, and γ *Arietis* were well situated for marking

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its northern edge at that point. From the position of these stars with respect to the luminosity, it appears that it was moving northerly amongst the stars from the 6^d to 10^d, and southerly from the 10^d to 13^d."

Lieut. J. M. Gillis, U.S.N., has forwarded several copies of his memoir "*On the Longitude of Washington, computed from the Moon-culminations observed during the years* 1839–1842, *inclusive*," extracted from the "*Transactions of the American Philosophical Society*."

The observations on which the present result is founded were all noted by the same person with a 5-foot transit by Troughton, solidly mounted. They have been computed by the direction of Professor A. D. Bache, director of the American coast-survey. The formula of reduction, which is given, is due to Mr. S. C. Walker. The observations, which were made at the *old naval observatory*, have already been extensively circulated.

The corresponding observations of Copenhagen, Kremsmünster, Cracow, and Wilna were computed, but the results showed errors of such magnitude in the adopted longitudes that they have not been incorporated. Assuming the longitude to be $5^h\ 8^m\ 4^s{\cdot}6$ W., we have the following corrections from the observations of the moon and stars at the respective observatories.

	1st Limb.	No. of Obs.	2d Limb.	No. of Obs.
	s		s	
Washington and Edinburgh	−7·51	64	−1·57	23
Oxford	7·81	32	2·77	13
Greenwich	3·75	60	3·38	41
Cambridge	1·58	57	6·96	23
Hamburg	−5·05	69	−4·87	12

Combining these results according to their weights,

282 observations of the 1st limb give a correction of $-4^s{\cdot}81$
112 ,, 2d ,, −4·06
Or the quantity to be subtracted from the assumed long. = −4·60

Hence the *old naval observatory* is $5^h\ 8^m\ 0^s{\cdot}0$ W., or 77° 0′ 0″.*

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* We are told that the old naval observatory was 1200 feet N. 5° W. from the centre of the Capitol-dome, in approximate latitude 38° 53′ 33″ N. Its longitude had been previously found to be $5^h\ 8^m\ 4^s{\cdot}6$ W. by the solar eclipse of 1836, by 8 corresponding immersions, and by 13 corresponding emersions of star occultations. It is singular that there is, so far as we can see, no reference to the *new or present national observatory* in this memoir. This oversight should be remedied without delay, for the very accurate determination contained in this memoir is chiefly valuable, as connecting the *national* observatory at Washington, now in full activity, with other observatories, the position of which, with respect to Greenwich, is either well known or in the course of becoming so.

ERRATUM.

In the last Annual Report, p. 94, *for* 373397·7 years, *read* 37339·7 years.

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